

Amalgam Safety and Children (7/06)

DeRouen TA, Martin MD, Leroux BG, Townes BD, et. al. Neurobehavioral effects of dental amalgam in children: A randomized clinical trial. JAMA 2006;295:1784-1792.

Although millions of amalgam restorations are placed every year, the health risk associated with the potential chronic release of elemental mercury still remains controversial. The purpose of this study was to assess the safety of dental amalgam restorations in children using a randomized clinical trial. A total of 507 children of ages 8 to 10 years with no prior amalgam restorations and at least one carious lesion on a permanent tooth were randomly assigned to receive dental restorations using either amalgam (n=253) or composite resin (n=254). On average, 18.7 amalgam and 21.3 composite surfaces were placed per child during a 7-year trial period. Outcome measures were based on neurobehavioral assessments of memory, attention/concentration, and motor/visuomotor domains, as well as nerve conduction velocities. Baseline mean creatinine-adjusted urinary mercury levels were 1.8 ug/g in the amalgam group and 1.9 ug/g in the composite group, but during follow-up were 1.0 to 1.5 ug/g higher in the amalgam group than in the composite group ($p < 0.001$). Despite the increase in elemental mercury exposure in the amalgam-treatment group, there was no statistically significant difference in neurobehavioral assessments or in nerve conduction velocity observed in children whose caries were restored using dental amalgam or composite materials. The authors concluded that amalgam should remain a viable dental restorative option for children.



DECS Comment: This study does suggest that children treated with dental amalgam will experience slightly higher urinary levels of mercury, but exposures are in the general range of background levels and do not cause a measurable difference in neurobehavior and nerve conduction compared with patients treated using composite resin. Interestingly, after five years from initial treatment, 50% more restorative treatment was needed in the composite group. For comprehensive information about amalgam restorations, visit the American Dental Association Web site at: www.ada.org/prof/resources/topics/amalgam.asp.